Fender®
MADE IN U.S.A.

SRA 400 STEREO POWER AMPLIFIER

(Professional Sound Reinforcement Amplifier)



OPERATION INSTRUCTION MANUAL

MANUAL NO. 017386

WARNING
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

SRA 400

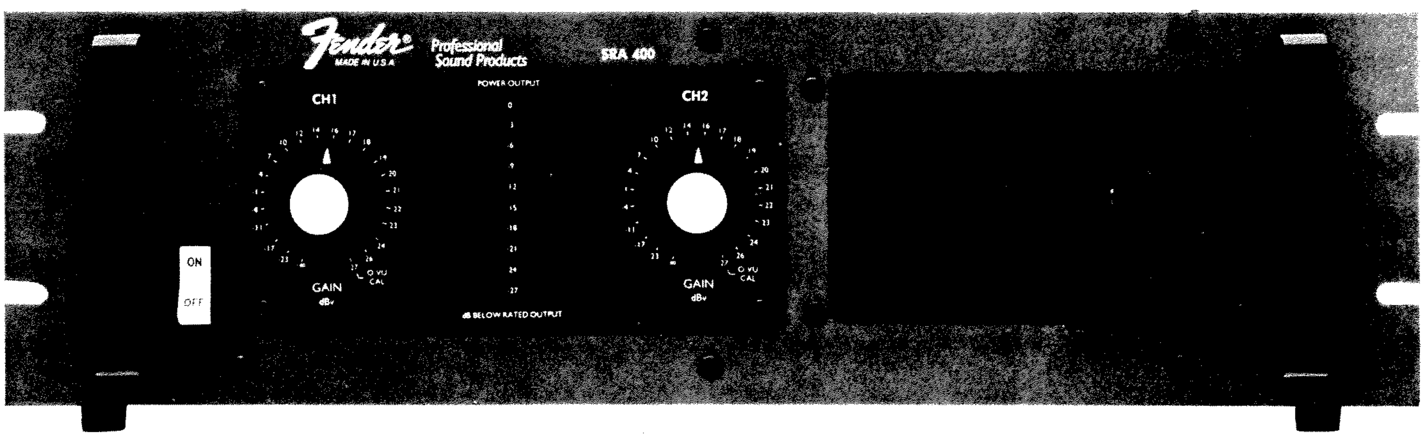
STEREO POWER AMPLIFIER

OPERATION INSTRUCTION MANUAL

BY

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PHYSICAL DIMENSIONS (APPROXIMATE, FOR SHIPPING PURPOSES)

	U.S. System	Metric System
Weight	43 pounds	19.5 kg
Width	19 inches	48.3 cm
Depth	17.3 inches	44.0 cm
Height	5.25 inches	13.3 cm

P.O. BOX 4137 • 1300 EAST VALENCIA DRIVE, FULLERTON, CALIFORNIA 92634

NOTE: See accompanying limited warranty folder.

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INTRODUCTION

The Fender SRA 400 is a 200 watts per channel solid state stereo power amplifier designed for sound reinforcement application. It is designed for standard 19″ rack mounting, and ruggedly constructed to withstand the physical abuse encountered in road travel. A ten segment, fast acting LED bar graph display indicates output power delivered to the load for each channel. The SRA 400 incorporates detented input attenuators with 22 steps, calibrated to indicate amplifier gain in dBV. These input attenuators allow for predictable and repeatable set-ups, accurate input sensitivity adjustments, and precise channel tracking. Each channel employs fully complementary circuitry throughout. Sixteen 250 watt power transistors are mounted on a massive tunnel heatsink with over 6000 square centimeters of cooling surface. A two speed thermally switched fan forces air from the rear of the unit through the tunnel, and out the front panel. A mode switch allows the operator to easily select stereo, mono, or bridged modes of operation.

The SRA 400 features protective circuitry such as fast action speaker fuses, power supply fuses, primary electromagnetic circuit breaker, over- temperature sensing, and output transistor commutating diodes, making it practically abuse proof. The following pages of this manual detail the functions of the various controls and jacks, and the use of the SRA 400 in a professional sound system.

BEFORE ATTEMPTING TO USE THE UNIT, FAMILIARIZE YOURSELF WITH THE INFORMATION CONTAINED IN THIS MANUAL.

SECTION I
SRA 400 FRONT AND REAR PANELS

SRA 400 FRONT PANEL

Input Attenuators (Fig. 1 – Item 1)

Each of these two calibrated stepped input attenuators lowers the input signal level to its respective channel, ahead of amplification stages. The gain of the amplifier is indicated in dBV. The O VU CAL position indicates the calibrated setting at which O VU (1.23 volts RMS) will drive the amplifier to full power.

CIRCUIT BREAKER/POWER SWITCH
(Fig. 1 – Item 2)

This combination Circuit Breaker/Power Switch controls AC power to the SRA 400 unit. The internal lamp glows green when the power is turned on. The circuit breaker will shut off AC power in the event of amplifier overload.

POWER OUTPUT DISPLAYS (Fig. 1 – Item 3)

The ten segment LED bar graph displays indicate power delivered to the load for each channel. These electronic displays respond quicker than ordinary mechanical VU meters, and thus allow accurate monitoring of program peaks. The displays are calibrated to indicate decibels below rated power (200 watts into 4 ohms, 100 watts into 8 ohms). The displays are color coded, with the red LED indicating full power.

SRA 400 REAR PANEL

CHANNEL 1 INPUT (Fig. 2 – Item 1)

CHANNEL 2 INPUT (Fig. 2 – Item 2)

These phone jacks on each channel are unbalanced and are used to connect an external signal such as that from the output of a mixer, to the respective power amplifier input channel.

CHANNEL 1 OUTPUT (Fig. 2 – Item 3)

CHANNEL 2 OUTPUT (Fig. 2 - Item 4)

For operator convenience, a standard phone jack and a banana jack, wired in parallel, are provided as output connectors for each channel. They are used to connect each speaker enclosure to its respective channel.The total impedance of the speaker in each channel should not be less than 4 ohms.

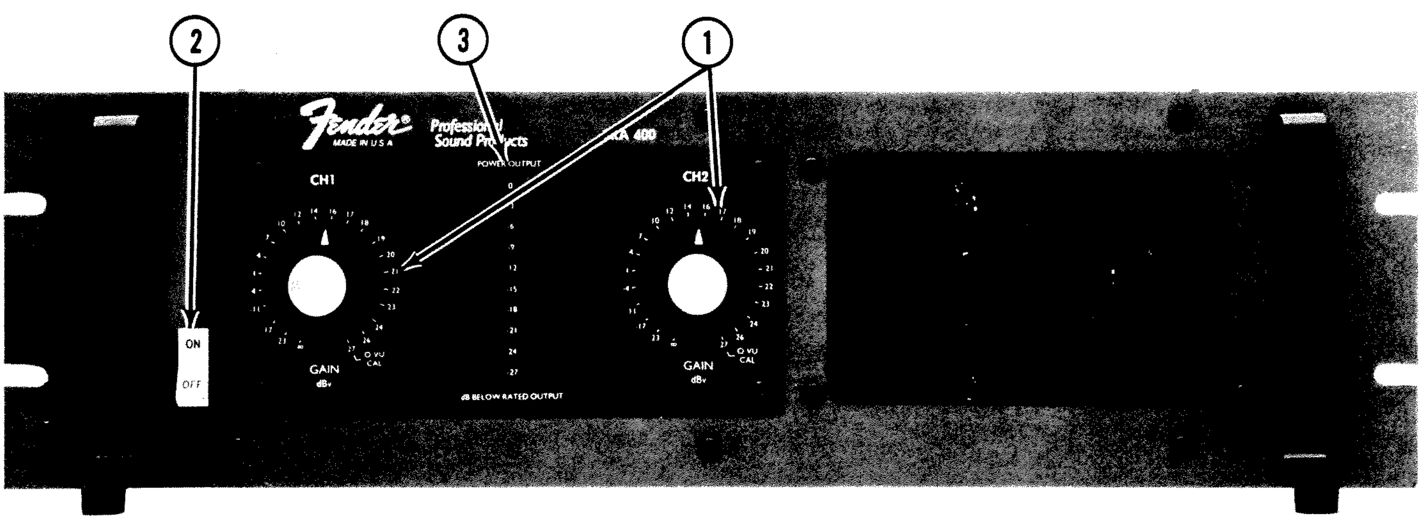


FIGURE 1 — Front Panel

CHANNEL 1 OUTPUT FUSE (Fig. 2 - Item 5)

CHANNEL 2 OUTPUT FUSE (Fig. 2 - Item 6)

These fuses are connected in series with their respective speaker jacks. They protect the speakers in the event of amplifier failure, and prevent damage to the amplifier caused by driving low impedance loads. Each fuse is rated at 6 amperes, 250 volts, and should be replaced only with one of the same rating and type (Littlefuse, catalog number 312006, or equivalent).

MODE SWITCH (Fig. 2 - Item 7)

This switch selects one of the following amplifier modes of operation.
Stereo: Normal dual channel operation.
Mono: Connects the inputs of both channels together. In this mode a signal input to channel 1 is also input to channel 2. This mode eliminates the use of a "Y" cord in monophonic sound applications.
Bridged: Converts the SRA 400 into a single channel 400 watt amplifier. The input is applied to channel 1, and the input of channel 2 should NOT be used. The gain is controlled by the channel 1 input attenuator. The load is connected across the red banana terminals. Minimum load is 8 ohms. Operation into smaller loads will trigger the protective circuitry and cause the amplifier to shut off.

FAN (Fig. 2 - Item 8)

This fan cools the tunnel heatsink and power transistors of the SRA 400 while in operation. To insure adequate airflow be sure that the fan opening is not blocked during operation. An internal thermostat automatically switches the fan to high speed when the heatsink temperature rises above 60°C (140°F).

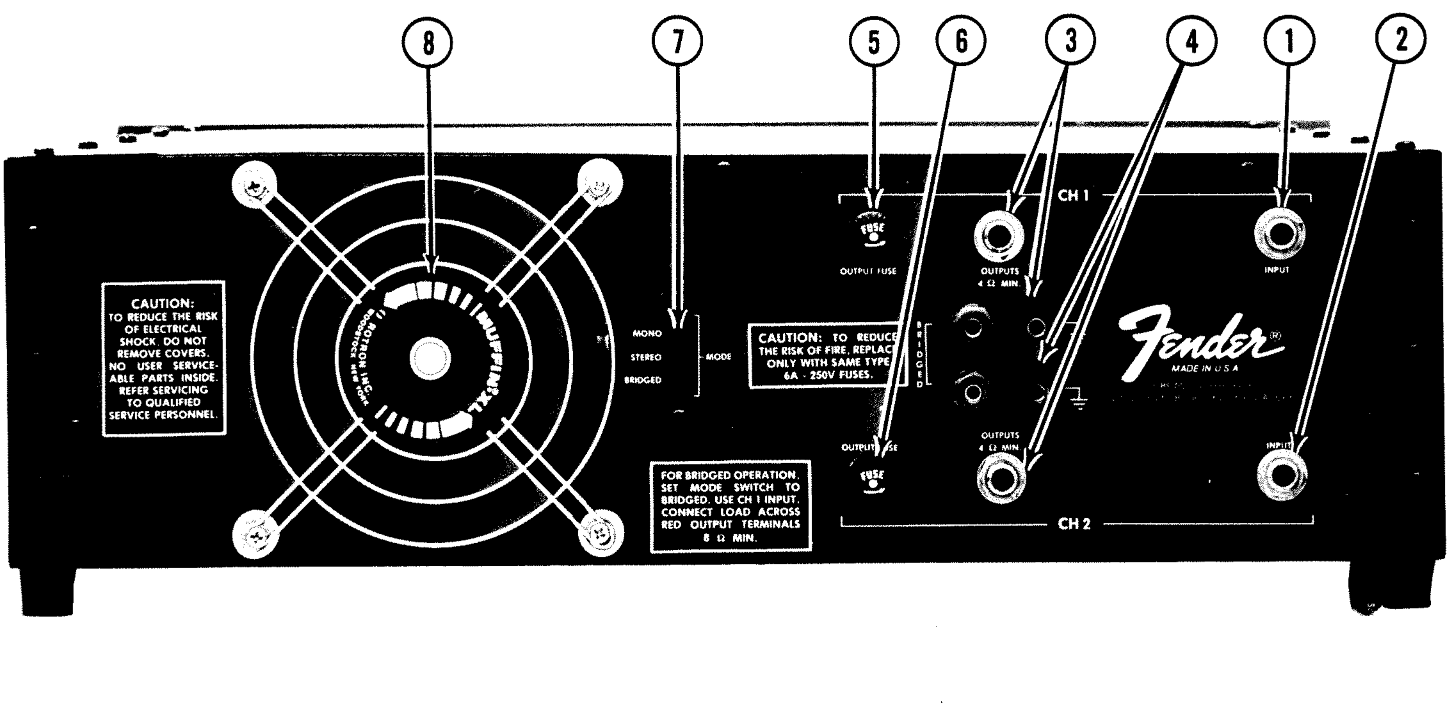


FIGURE 2 — Rear Panel

SECTION II
SETTING UP THE SYSTEM

SOUND SYSTEM CONNECTIONS

The SRA 400 is a stereo (two channel) amplifier and special care must be taken in setting it up. The unit contains two channels of power amplification, and offers some special connections which may be advantageous under certain conditions. The normal set-up and some of the special connections are detailed in this section.

RACK MOUNTING FOR SRA 400

The SRA 400 can be used as a stand alone unit, or if preferred, can be mounted with other equipment in a standard 19" (48.3cm) rack. If rack mounting is desired, it may be necessary to remove the plastic feet from the bottom of the amplifier. Unscrew them with a phillips head screwdriver. After removing the feet, re-install the screws into the chassis. In addition to mounting the amp by its front panel, it is recommended that the rear of the amp be securely supported in the rack. For installation in portable racks, rear support is mandatory.

SPEAKER CONNECTION

Each output channel of the SRA 400 is designed for a minimum total load impedance of 4 ohms. If the total impedance of the speakers on either channel output is less than 4 ohms the amplifier will be overloaded and cause the corresponding channel's speaker fuse to blow. For example: at high volume, overload might occur if two 4 ohm speakers were plugged into one channel's pair of output jacks (a parallel connection resulting in a load impedance of 2 ohms). Connect the speakers to the power amplifer using #18 AWG or larger unshielded wire. "Zip Cord" is suitable for this purpose. For long runs of speaker cable (over 25 feet), #16 AWG or larger wire is recommended. While use of a shielded guitar cable to connect the speakers will not damage the equipment, a loss of volume or damage to the shielded cable may result. Choose only high quality ¼" phone or banana plugs, and check the cables for possible short-circuits; an internal short-circuit or a cracked phone plug insulator might blow a fuse in the power amplifer.

STEREO PROGRAM CONNECTION (Fig. 3)

The conventional stereo program system set-up is illustrated in Figure 3. In this connection the program outputs of a conventional stereo mixer are fed to the corresponding channel inputs of the SRA 400. Channel outputs of the SRA 400 are then connected to their corresponding speakers.

MONOPHONIC CONNECTION (Fig. 4)

This shows how a monophonic signal source such as one program channel of a mixer, can be used to drive both channels of the SRA 400 power amplifier in monophonic mode. Set mode switch to mono. Connect the monophonic signal source to channel 1 input. Both channels will be driven by the input of channel 1.

MONOPHONIC/MONITOR CONNECTION (Fig. 5)

This diagram shows that if stereo program output is not necessary, one channel of power amplification in the SRA 400 may be allocated to the program material, and the other to the monitor material. In the case illustrated, channel 1 has been allocated to the program material, and channel 2 has been assigned to the monitor material.

STEREO BI-AMPLIFIED CONNECTION (Fig. 6)

A bi-amplified system can provide increased headroom, efficiency, damping factor, and decreased distortion. The SRA 400 power amplifier can be incorporated in bi-amplified sound systems to realize these advantages. This diagram shows the left and right program mixes fed to a two channel electronic crossover, where each channel is frequency divided into low frequencies and high frequencies. The left program channel's low frequency material is fed to the SRA 400 channel 1 input, while the left program channel's high frequency material is fed to the SRA 400 channel 2 input. The SRA 400 channel 1 output is connected to the high frequency driver (tweeter) of the left bi-amplified speaker. The SRA 400 channel 2 output is connected to the low frequency driver (woofer) of the left bi-amplified speaker. Similarly, the right program channel's material is processed and eventually amplified by an additional stereo power amplifier and fed to a right bi-amplified speaker.

STEREO BI-AMPLIFIED CONNECTION #2 (Fig. 7)

This diagram shows a second bi-amplified scheme that is widely used. In this stereo system one power amplifier is used to amplify only the highs, and another amplifier to process the lows. In most popular music low frequency material contains considerably more energy than high frequency material, and most sound reinforcement speaker systems have high frequency drivers which have greater efficiencies than their associated low frequency drivers. As a result, the power amplifier chosen to amplify the high frequency material need NOT be as powerful as the one chosen to amplify the low frequency material. In the system shown in Figure 7, the SRA 400 was chosen as the low frequency amplifier.

MONOPHONIC BI-AMPLIFIED CONNECTION (Fig. 8)

This diagram shows how the SRA 400 can also be used independently as a monophonic bi-amplified system.

BRIDGED OUTPUT CONNECTION (Fig. 9)

This diagram shows how the SRA 400 can be used as a 400 watts single channel amplifier. Set mode switch to BRIDGED. Connect input to channel 1. Leave channel 2 input unused. Connect 8 Ω load across red banana jacks. Use of smaller loads will cause protective circuitry to shut off amplifier.

SECTION III
SRA 400 STEREO POWER AMPLIFIER SOUND SYSTEM CONNECTIONS

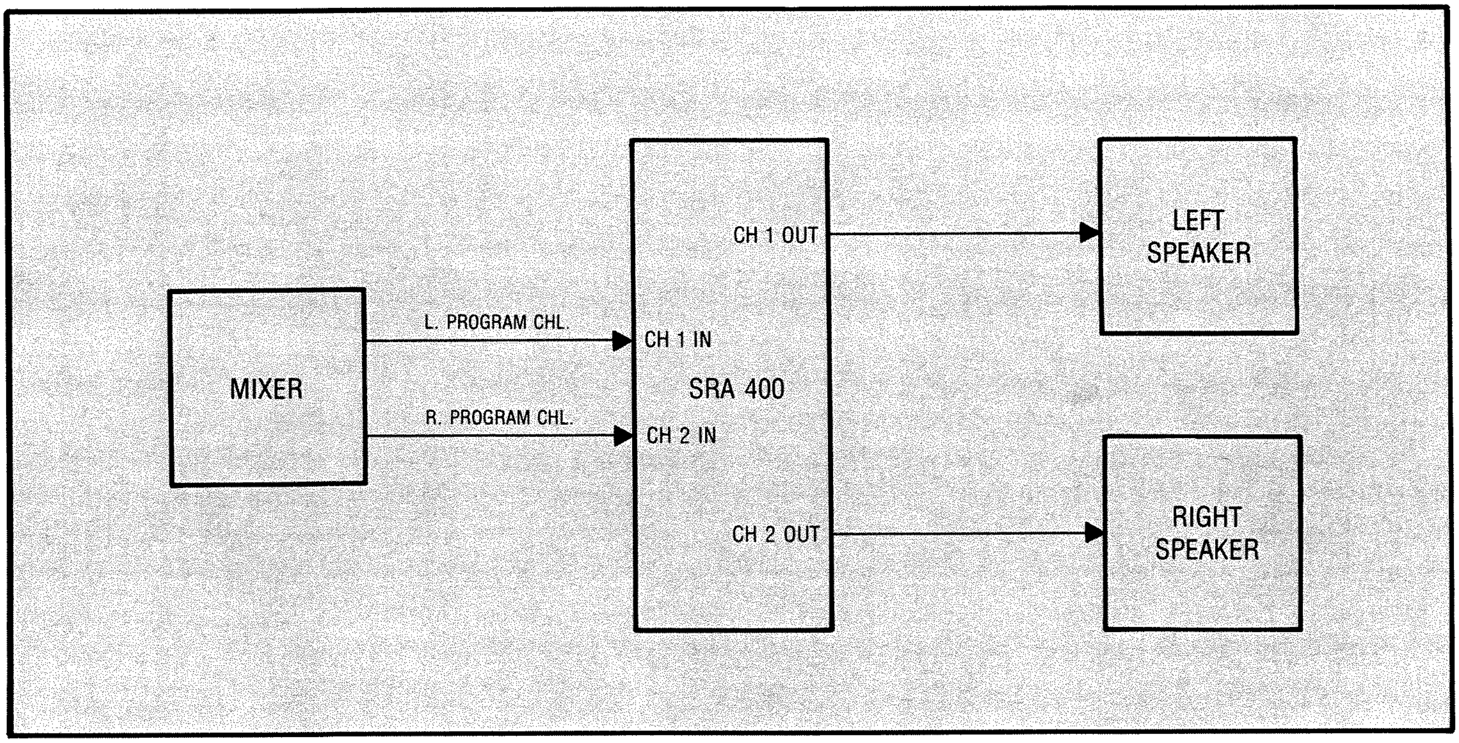


FIGURE 3 — Typical Stereo Program Connection

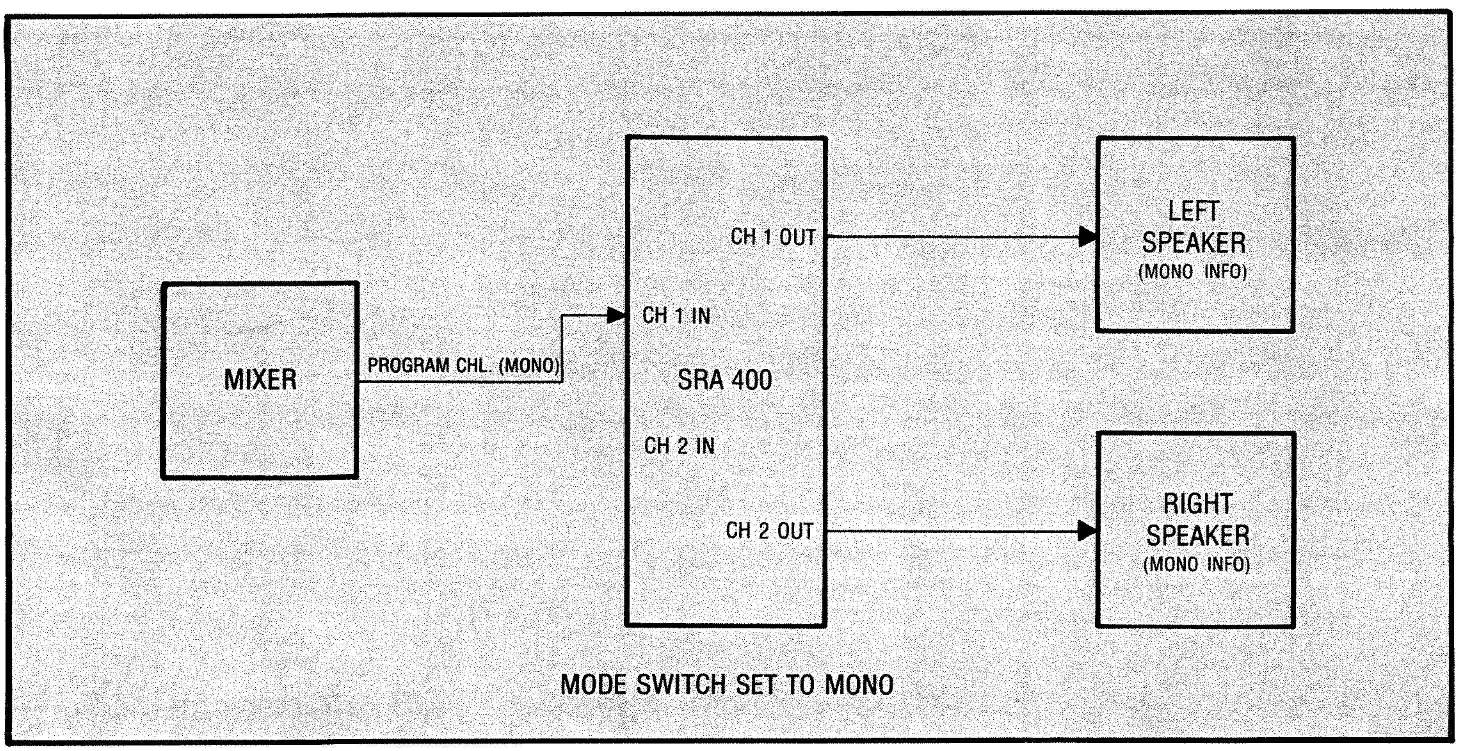


FIGURE 4 — Two Channel Output From Single Source (Monophonic)

SRA 400 STEREO POWER AMPLIFIER
SOUND SYSTEM CONNECTIONS

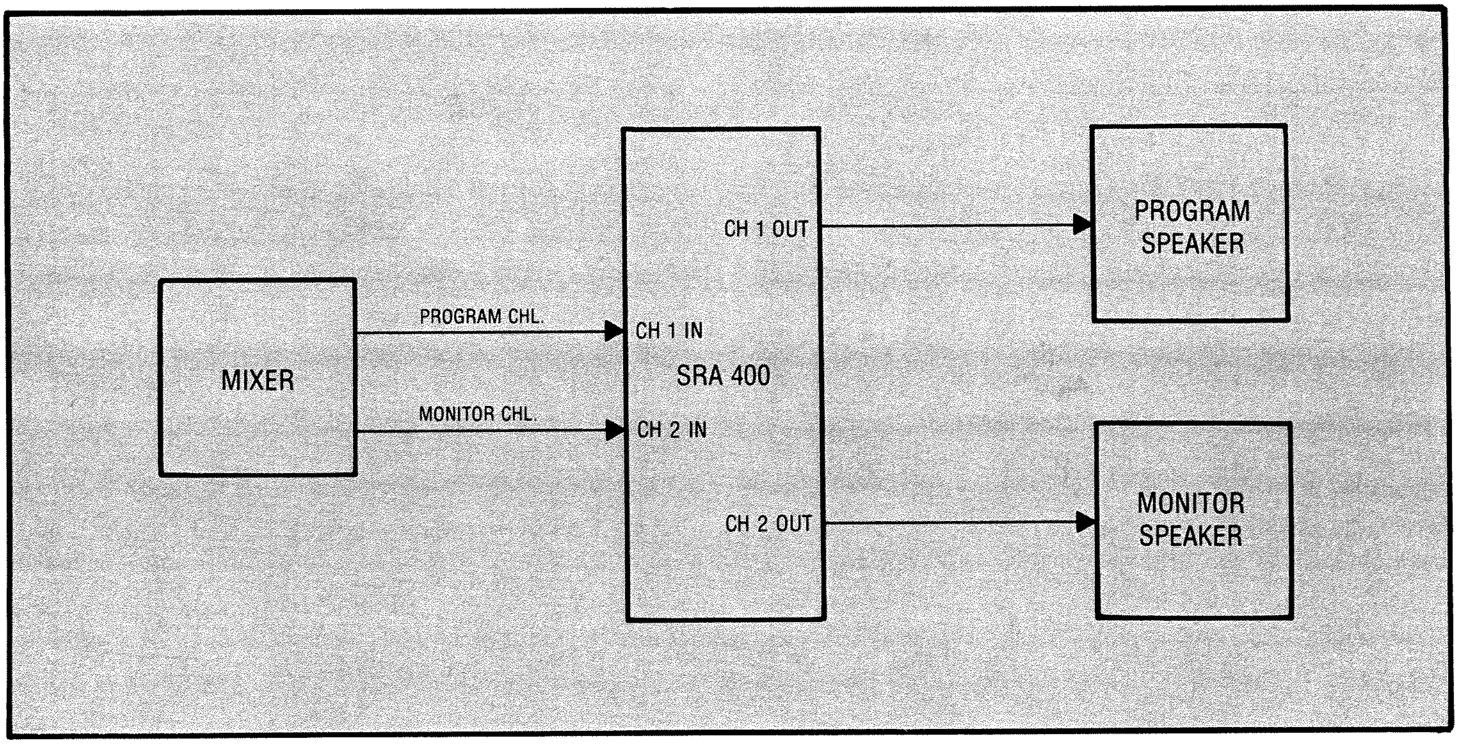


FIGURE 5 — Monophonic Program/Monitor Connection

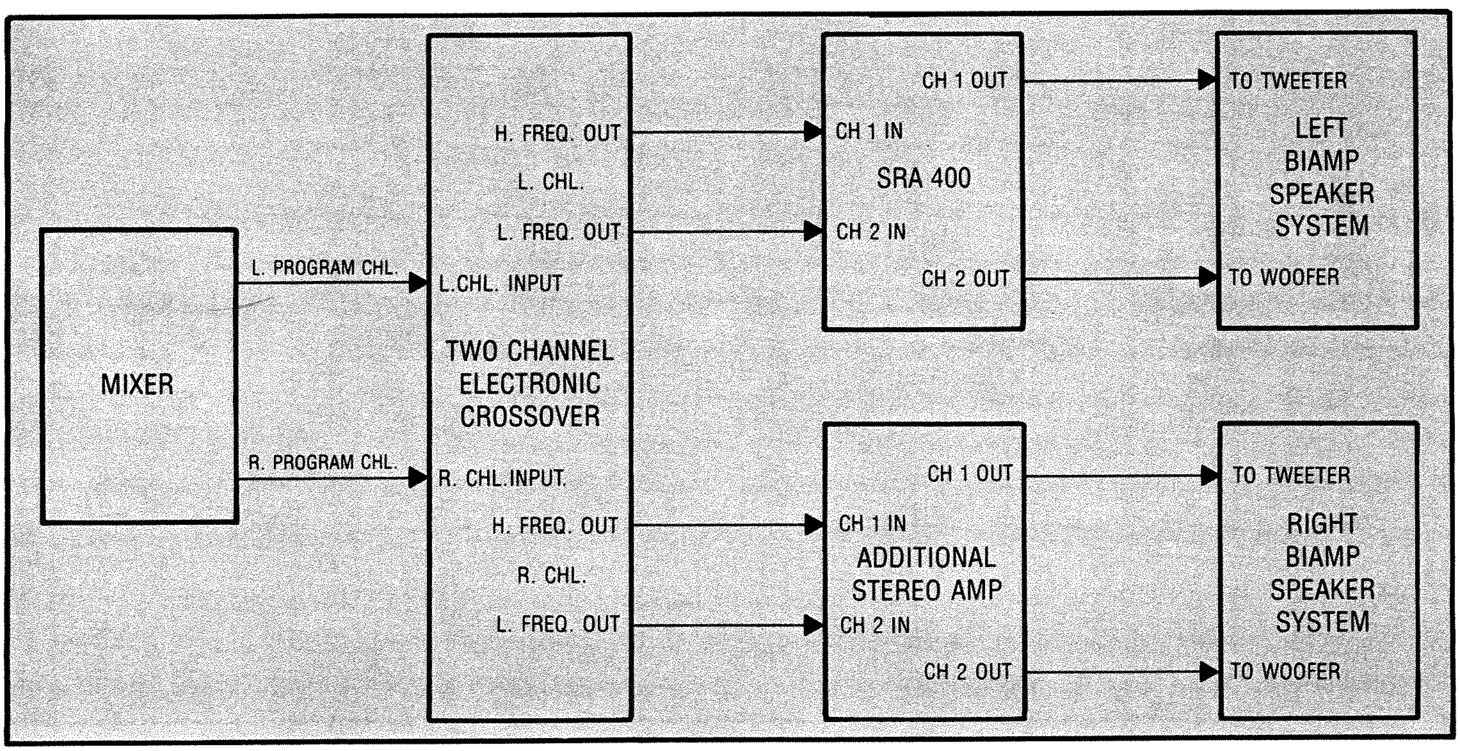


FIGURE 6 — Stereo Bi-amplified Connection # 1

SRA 400 STEREO POWER AMPLIFER
SOUND SYSTEM CONNECTIONS

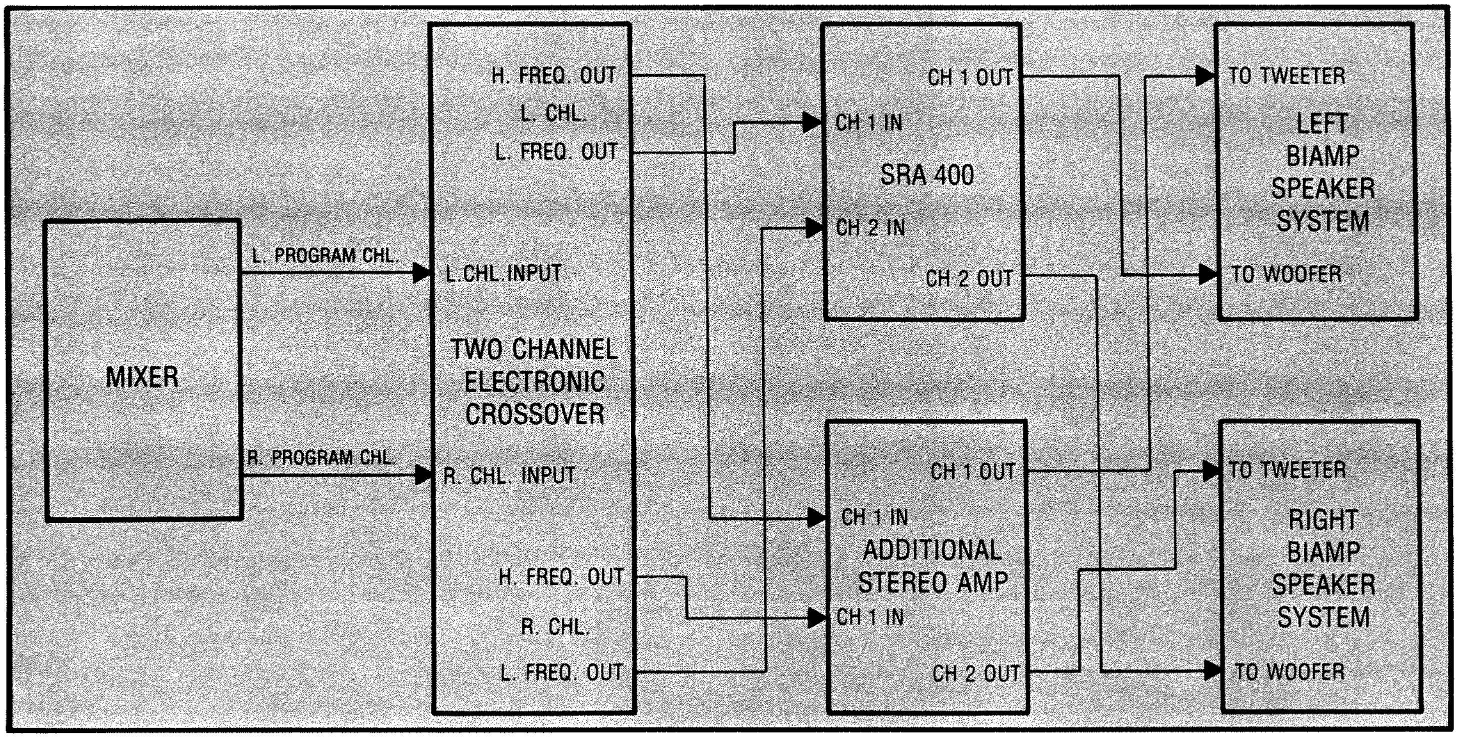


FIGURE 7 — Stereo Bi-amplified Connection # 2

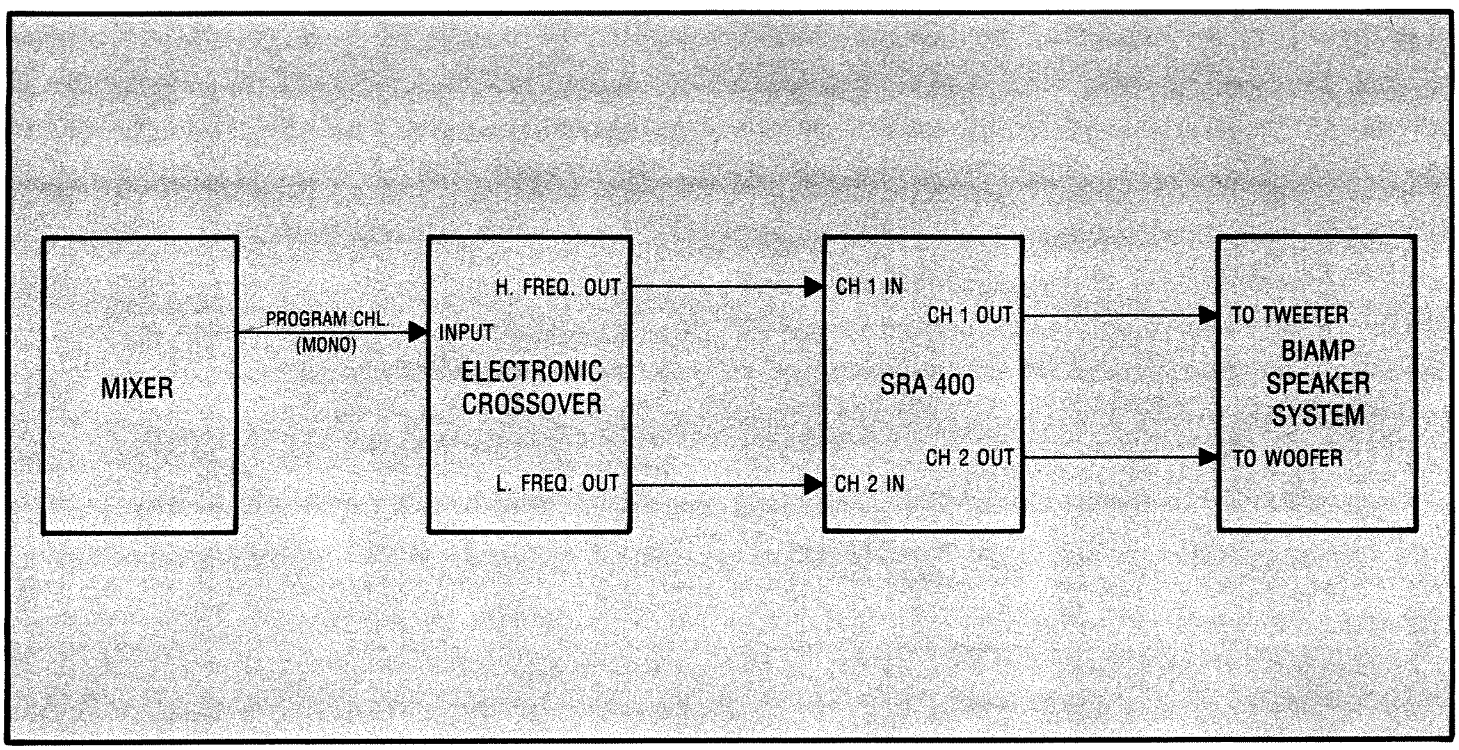


FIGURE 8 — Monophonic Bi-amplified Connection

SECTION III
SRA 400 STEREO POWER AMPLIFER
SOUND SYSTEM CONNECTIONS

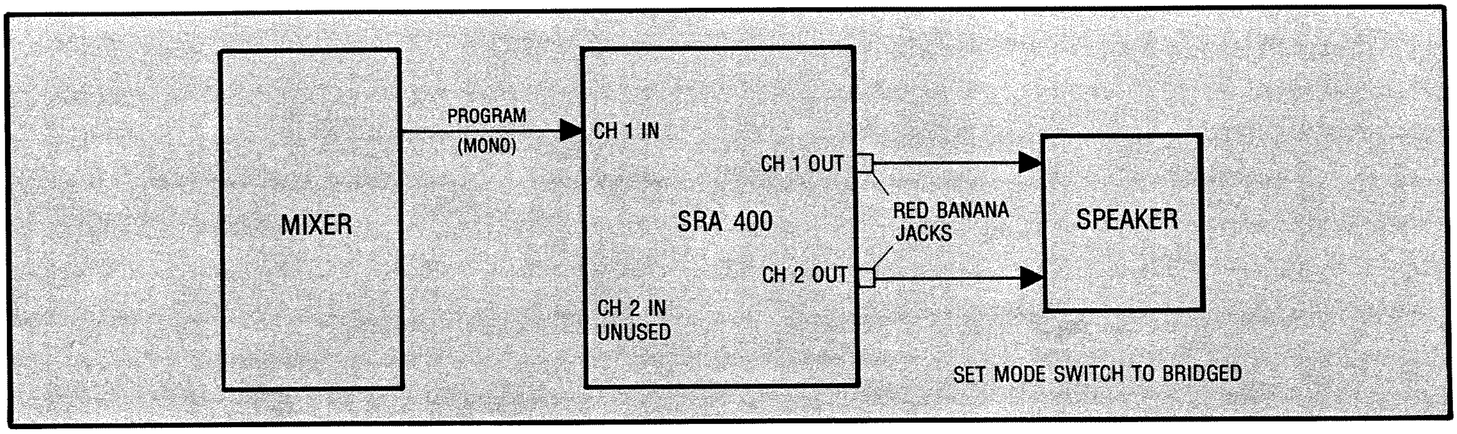


FIGURE 9 — Bridged Output Connection

PRELIMINARY OPERATING SEQUENCE

1. Connect the sound system required for your specific application. (See Sound System Connections.)

2. Plug in line cord of the SRA 400. Do NOT remove the grounding prong on the AC plug, it prevents hum and possible shock. If necessary, use a three-prong to two-prong adapter.

3. Turn on the sound system's mixer, and any other equipment BEFORE turning on the SRA 400. This will prevent possible speaker damage caused by transients from the other equipment.

4. Turn the power switch on (Fig. 1 – Item 2). The switch's internal lamp will light up, and the fan will begin to operate.

5. Set both input attenuators to 0 VU CAL, or as required for your sound system.

6. Adjust mixer output until a suitable listening level is achieved, or until the red LEDs on the SRA 400 bar graph displays begin to flicker.

SRA 400 GENERAL SPECIFICATIONS

	4Ω Load	8Ω Load
Output power, continuous, per channel with no more than .09% THD (Mono or Stereo mode)	200 W	100 W
Output power, Bridged mode, continuous with no more than .18% THD	not recommended	400 W
Damping Factor at 50 Hz	65	130
Dynamic Headroom	1.9 dB	2.9 dB
Intermodulation Distortion	.03%	
Total Harmonic Distortion	.09% (typically less than .01% at 1 kHz full power)	
Transient Intermodulation Distortion*	.05%	
Bandwidth	20-20,000 Hz +0, −0.4 dB 10-60,000 Hz +0, −3.0 dB	
Slew Rate	40 V/μs	
Input Sensitivity for Rated Power	1.28 V	
Power Requirements	120 VAC, 50-60 Hz, 860 W	
Input Impedance: Stereo	32KΩ	
Mono	16KΩ	
Bridged	N/A	32KΩ

*3.18 kHz square wave filtered at 100 kHz, mixed with 15 kHz sine wave in a 4:1 ratio.

"SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE"

NOTE: SEE ACCOMPANYING LIMITED WARRANTY FOLDER

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